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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,998	02/27/2004	Pantas Sutardja	MP0308	9194
26703	7590	08/20/2008	EXAMINER	
HARNESS, DICKEY & PIERCE P.L.C. 5445 CORPORATE DRIVE SUITE 200 TROY, MI 48098				CORRIELUS, JEAN B
ART UNIT		PAPER NUMBER		
2611				
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			08/20/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/788,998	SUTARDJA, PANTAS	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jean B. Corrielus	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 29 April 2008.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-150 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1-46, 50, 51, 137 and 139 is/are allowed.  
 6) Claim(s) 47-49, 52, 53, 75-81, 84, 85, 104-108, 111, 112, 132-136, 138, 140-147 and 150 is/are rejected.  
 7) Claim(s) 54-74, 82, 83, 86-103, 109, 110, 113-131, 148 and 149 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Drawings***

2. Applicant's response has overcome the drawing objection sets forth in the outstanding office action.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 147 and 150 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 147 recites "an output of a reconstruction filter". However, the claim does not recite the necessary connection to the input of the reconstruction filter to provide the output . The same comment applies to claim 150.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 47-48, 75-76, 79-80, 106-107, 132-133, 140 and 141 are rejected under 35 U.S.C. 102(e) as being anticipated by Behrens et al ('Behrens')US Patent No. 6,819514.

As per claim 47, Behrens discloses a method and apparatus (fig. 3 fig. 6) comprising a VGA 22 responsive to an input signal 58 from the communication system (fig.3) ;an analog-to-digital converter (ADC) 24, wherein the ADC 24 is responsive to an output of the VGA 22; a first filter B103, wherein tap weight coefficients of the first filter are updated according to a first least mean square (LMS) engine see col. 20, line 59-60, wherein the first filter is responsive to an output of the ADC 24, and wherein at least one tap weight coefficient of the first filter B103 is constrained see col. 18, lines 28-29; a second filter B122/fig. 6, wherein the second filter B122/fig. 6 is responsive to an output of the first filter B103, and wherein a number of tap weight coefficients of the second filter B122/fig. 6 , col. 12, line 22 comprises less than a number of the tap weight coefficients of the first filter B103 see col. 20, line 63; col. 21, lines 35-36; an analog filter 20 (reconstruction filter) (note that the analog filter is known in the art as a reconstruction filter see US Patent Publication No. 2003/0052805 paragraph 0021 and US Patent No. 4,757,519 col. 11, lines 43-52) responsive to said first filter B103 (Note that the analog filter is responsive to the first filter B103 because the output of the filter

B103 is provided in the feedback path that control the amplifier 22) and, a gain controller 50 for controlling gain of the VGA 22, wherein the gain controller is in communication with the VGA 22 and responsive to the output of the second filter B122/fig.6 , see output on line B102 and the analog filter (reconstruction filter) (note that the gain controller receives signal 25 (i.e. output of the A/D converter 24 which is responsive to the output of the analog (reconstruction) filter.

As per claim 48, Behrens further teaches that the tap weight coefficients of the second filter are updated according to an adaptation engine see col. 12, lines 39-40.

As per claim 75, Behrens teaches that the first and second filter include each a FIR filter see col. 11,line 12; col. 12, line 21, fig. 6 and fig. 8B.

As per claim 76, the system is included and a disk drive see col. 1, line 34.

As per claim 79, see claim 47.

As per claim 80, see claim 48.

As per claim 106, see claim 47.

As per claim 107, see claim 48.

As per claim 132, see claim 75.

As per claim 133, see claim 76.

As per claim 140, see claim 47.

As per claim 141, Behrens teaches that the analog filter 20 ( reconstruction filter) is separate from the first filter B103 and the second filter B122 see the drawings.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 104 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Behrens in view of Livingston US patent No. 6,513,141.

As applied to claim 47 above Behrens teaches every feature of the claimed invention but fail to explicitly teach the following limitations of" f.) detecting an information sequence in the first filtered signal; g.) reconstructing an information signal from the detected information sequence; and h.) generating an error signal, wherein the error signal is associated with the reconstructed information signal". Livingston teaches the further limitations of" f.) detecting an information sequence in the first filtered signal 78 see output of detector 88; g.) reconstructing an information signal 117 from the detected information sequence see output of remodulator 116; and h.) generating an error signal 120, wherein the error signal 120 is associated with the reconstructed information signal 117. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Behrens in order to provide the system with the enhance capability to detect and correct for signal error so as to preserve data integrity.

9. Claims 49, 52-53, 77-78, 81, 84-85, 105, 108, 111-112, 134-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens.

As per claim 49, Behrens does not teach the further limitation of using a second LMS engine in the adaptation engine. However, it is well known in the art to use LMS engine

to update filter coefficients. Given that fact, it would have been obvious to one skill in the art to incorporate a LMS engine in the adaptation module in order to advantage of its enhance technological feature such as real time adaptation processing.

As per claim 52, Behrens does not teach that a two tap filter is used in the second filter. However, implementing the filter with a two tap would have been obvious to one of ordinary skill in the art as it would have only required simple modification of the mathematics to derive such a coefficient so as to satisfy system requirements.

As per claim 53 representing the filter as “a” and “1+b” would have been obvious to one of ordinary skill in the art and the reasons would have been the same as provided with respect to claim 52.

As per claim 77, Behrens does not explicitly teach that the VGA, the ADC, the first filter the second filter and the gain controller are formed on a monolithic substrate. However, it is well known in the art to use a monolithic substrate to implement circuit components. Given that, it would have been obvious to one skill in the art to implement the VGA, the ADC, the first filter the second filter and the gain controller on a monolithic substrate because monolithic substrate provides easy implementation of circuit component.

As per claim 78 it would have been obvious to one skill in the art to design the system in such a way as to be compliant with the standard 802.11 so as to provide compatibility to existing devices that uses similar standard.

As per claim 81, see claim 49.

As per claim 84, see claim 52.

As per claim 85, see claim 53.

As per claim 105, see claim 78.

As per claim 108, see claim 49.

As per claim 111, see claim 52.

As per claim 112, see claim 53.

As per claim 134, see claim 77.

As per claim 135, see claim 78.

10. Claims 136, 138, 144, 145 and 146 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens in view of Jayaraman et al US Patent Application Publication No. 20040013190.

As per claim 136, Behrens discloses a method and apparatus (fig. 3 fig. 6) comprising a VGA 22 responsive to an input signal 58 from the communication system (fig.3); an analog-to-digital converter (ADC) 24, wherein the ADC 24 is responsive to an output of the VGA 22; a first filter B103, wherein tap weight coefficients of the first filter are updated according to a first least mean square (LMS) engine see col. 20, line 59-60, wherein the first filter is responsive to an output of the ADC 24, and wherein at least one tap weight coefficient of the first filter B103 is constrained see col. 18, lines 28-29; a second filter B122/fig. 6, wherein the second filter B122/fig. 6 is responsive to an output of the first filter B103, and wherein a number of tap weight coefficients of the second filter B122/fig. 6 , col. 12, line 22 comprises less than a number of the tap weight coefficients of the first filter B103 see col. 20, line 63; col. 21, lines 35-36. However, it fails to teach that the number of taps of the second filter are generated based on the output of the first filter. Jayaraman et al teaches that the number of taps of the second

filter310 are generated based on the output of the first filter 306. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Behrens so as to allow optimum selection of the tap coefficients.

As per claim 138, see claim 136.

As per claim 145, see claim 136.

As per claim 146, Behrens teaches every feature of the claimed invention but does not teach the further limitation of an adaptation engine to generate the tap coefficients of the second filter based on the output of the first and second filters. Jayaraman teaches the further limitations of an adaptation engine 320 to generate the tap coefficients of the second filter based on the output of the first and second filters. See fig. 2. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Behrens and the motivation to do so would have been the same as provided above with respect to claim 136 above.

As per claim 144, see claim 146.

11. Claims 142 and 143 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens in view of Rahman et al US Patent Application Publication No. 20030174783.

As per claim 142, as applied to claim 47 above, Behrens teaches every feature of the claimed invention but does not teach the further limitations of the reconstruction filter connected between the first filter and the gain controller. Rahman teaches fig. 1, a reconstruction filter 24 connected between a first filter 12 and a gain stage 28 (inherently include a gain controller to control the gain of the input signal). Given that

fact, it would have been obvious to one skill in the art to incorporate such a teaching in Behrens in order enhance signal processing so as to allow proper reconstruction of the original signal.

As per claim 143, Behrens further teaches the second filter 122 is connected between the gain controller 50 and the first filter B103.

***Allowable Subject Matter***

12. Claims 1-46, 50-51,137 and 139 are allowed.
13. Claims 54-74, 82-83, 86-103, 109-110, 113-131 , 148 and 149 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
14. Claims 147 and 150 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Response to Arguments***

15. Applicant's arguments with respect to claims 47 and 136 (including related rejected claims) are moot in view of the ground of rejection set forth above.

***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Monday-Thursday from 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jean B Corrielus/  
Primary Examiner  
Art Unit 2611